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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

PAPE, ZACHARY

ART UNIT PAPER NUMBER

2835

DATE MAILED: 07/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/803,399	BARSUN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Zachary M. Pape	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-19,23,25,27-37,39-44,46 and 47 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19,23,25 and 27-33,47 is/are allowed.
- 6) ☒ Claim(s) 1-7,9,11,13-17,34-37,39-43 and 46 is/are rejected.
- 7) ☒ Claim(s) 8,10,12,18 and 44 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

The following detailed action is in response to the correspondence filed 5/9/2006.

### Interview Summary

The Examiner hereby acknowledges the Applicant's response to the interview summary filed 5/17/2006.

### Objection to the Specification

The objection to the specification (Title) has been withdrawn in view of the amendment to said title.

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. **Therefore, the third device, third heat sink, third array of fins, fourth device, fourth heat sink, fourth array of fins extending at least partially across the third array of fins as detailed in claim 14 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.** Presently the drawings only support a single set of devices.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure

number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 4 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

With respect to claim 4, the claim recites, "the second base is configured to conduct heat from the central processing unit to the second array of fins without conducting heat to the first base" however as illustrated in Fig 5, the heat pipe (102)

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which is thermally connected to the second base appears to be thermally connected to the first base (90) as well (See Figs 1a, and 1b below). Thus the recitation, “without conducting heat to the first base” appears to be incorrect.

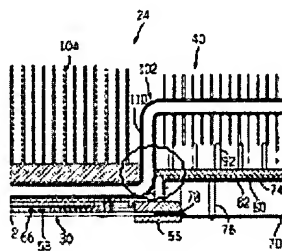


Fig 1a

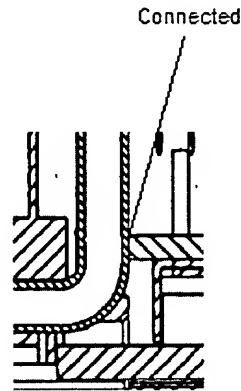


Fig 1b

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4-7, 13, 15, 34-37, 39-43, 46 are rejected under 35 U.S.C. 102(b) as being anticipated by DiBene, II et al. (US 6,356,448 – hereafter referred to as DiBene).

With respect to claim 1, DiBene teaches a computing system comprising: a circuit board (102); a first device (118) having a first heat transfer surface, a first heat sink (142) including: a first base (150) thermally coupled to the first heat transfer surface; and a first array of fins (144) thermally coupled to the first base so as to extend

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away from the first base in a first direction (Upward, see Fig 3), wherein the first array of fins includes consecutive fins forming a transverse channel (That which airflow (174) flows through) therebetween extending in a second direction perpendicular to the first direction and having opposite transverse open ends (See Fig 3 where the fins 144 are open at both ends) a second device (108) coupled to the circuit board, the second device having a second heat transfer surface (Top surface of 108); and a second heat sink (Comprising 106, 126, 128 and area 158) including: a second base (126, 128, 106) thermally coupled to the second heat transfer surface; and a second array of fins (Material between 168) coupled to the second base and extending at least partially across the first array of fins (As illustrated in Fig 1).

With respect to claim 2, DiBene further teaches that the first device (108) is electrically connected to the second device (118 – See Column 6, Lines 35-50).

With respect to claim 4, as best can be understood by the Examiner, DiBene further teaches that the second device comprises a processor assembly including a central processing unit (Column 1, Lines 15-17) and wherein the second base (126, 128, 106) is configured to conduct heat from the central processing unit (108) to the second array of fins (Between 168) without conducting heat to the first base (150, as illustrated in Fig 1, the second base (106, 126, 128) is configured to not conduct heat to the first base (150)).

With respect to claim 5, DiBene further teaches that the first device comprises a power pod assembly (Column 6, Lines 35-37).

With respect to claim 6, DiBene further teaches that the power pod assembly is dedicated solely to supplying power to the processor assembly (Since DiBene fails to teach any other components which utilize power, DiBene implies that all the power produced by 118 is utilized solely by the component 108).

With respect to claim 7, DiBene further teaches that the first array of fins (144) extends over the first base (150) which overlaps the first device (118) and wherein the first device comprises a power pod assembly (Column 6, Lines 35-37).

With respect to claim 13, DiBene further teaches that the first device and the second device are coupled to one another to form a multi-device module adapted to be connected to the circuit board (Column 6, Lines 35-50).

With respect to claim 15, DiBene further teaches a central electronic control coupled to the circuit board (As illustrated in Fig 15, 1502).

With respect to claims 34, DiBene further teaches a processor module comprising: a processor (108) having a first heat transfer surface (Top of 108); a power pod (118) electrically connected to the processor to supply power to the processor, the power pod having a second heat transfer surface (Which 150 abuts against); a first heat sink (142) overlapping the power pod (118) and thermally coupled to the second heat transfer surface (See Fig 2); and a second heat sink (Comprising 106, 126, 128, 158, 168) thermally coupled to the first heat transfer surface, wherein the second heat sink extends at least partially across the first heat sink (As illustrated in Fig 3).

With respect to claim 35, DiBene further teaches that the second heat sink extends completely across the first heat sink (As illustrated in Fig 3).

With respect to claim 36, DiBene further teaches that the second heat sink extends on opposite sides of the first heat sink (As illustrated in Fig 3).

With respect to claim 37, DiBene further teaches a multi-device heat sink module for being connected to a circuit board, the module comprising: a power supply (118), a processor (108), a first means (142) for dissipating heat emitted by the power supply while not substantially receiving heat from the processor; and a second means (158, 168, 106, 126, 128) for dissipating heat emitted by the processor (108) wherein the second means extends at least partially across the first means (See Fig 3).

With respect to claim 39, DiBene further teaches a heat dissipating arrangement comprising: a first heat emitting device (118); a second heat emitting device (108); and a first heat sink (142) having fins thermally coupled to the first device, wherein the fins of the first heat sink overlap opposite sides of the second device (As illustrated in Fig 3).

With respect to claim 40, DiBene further teaches a second heat sink (Comprising 106, 126, 128, 158, 168) thermally coupled to the second device (108), wherein the first heat sink extends on opposite sides of the second heat sink (As illustrated in Fig 1).

With respect to claim 41, DiBene further teaches a first heat sink for use with a first heat emitting device (118), a second heat emitting device, and a second heat sink thermally coupled to the second heat emitting device the first heat sink comprising: at least one heat dissipating structure (142) having fins (144) configured to be thermally coupled to the first heat emitting device while extending at least partially around and on opposite sides of the second heat sink (As illustrated in Fig 1).



With respect to claim 42, DiBene further teaches a first heat emitting device (118), a second heat emitting device, and a second heat sink thermally coupled to the second heat emitting device and having a plurality of fins (158, 168), the first heat sink comprising: at least one heat dissipating structure (142) configured to be thermally coupled to the first heat emitting device while extending at least partially around and on opposite sides of the plurality of fins of the second heat sink (As illustrated in Fig 3).

With respect to claim 43, DiBene further teaches a method for dissipating heat from a first electronic device (118) positioned proximate a second electronic device (108), the method comprising: directing heat generated by the first device (118) through a first array of fins extending across and around at least a portion of the second device so as to dissipate heat on opposite sides of the portion of the second device (See Fig 3).

With respect to claim 46, DiBene further teaches that the first base (150) is horizontally spaced from and beside the second base (106, 126, 128, see Fig 1).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 3, 9, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiBene in view of Connors (US 6,626,233).**

With respect to claim 3, DiBene teaches the limitations of claim 1 and further teaches that the first array of fins (144) overlaps the first device (118), but is silent to the teaching that the second device generates heat at a second greater rate than the first device. Connors teaches that a second device (I.E. a processor) generates heat at a second greater rate than a first device (I.E. power supply – Column 5, Lines 1-6). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Connors with that of DiBene to teach the conventionality of having different components generating different amounts of heat (Specifically that a processor generates more heat than a power supply).

With respect to claim 9, DiBene teaches the limitations of claim 1 above, but fails to teach that the second heat sink includes a heat pipe extending at least partially across the first array of fins. Connors teaches the conventionality of placing a heat pipe (44) within a heat sink (30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Connors with that of DiBene to provide a more efficient heat transfer system (Connors, Column 1, Lines 49-51).

With respect to claims 11, Connors further teaches that the heat pipe extends at least partially along a second base (As illustrated in Fig 4).

**Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over DiBene.**

With respect to claim 14, DiBene teaches the limitations of claim 1 above, but fails to teach a second set of devices with a second set of respective heat sinks and fins, however it would have been obvious to one having ordinary skill in the art at the time the invention was made to duplicate the devices, heat sinks, and fins along with the arrangement thereof since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. Duplicating the devices, heat sinks, and fins of DiBene would provide further similar cooling to similar components and arrangements thus providing efficient means to purge any excess associated heat from such electronic assemblies (Column 1, Lines 15-18).

**Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiBene in view of Brewer et al. (US 6,522,536)**

With respect to claim 16, DiBene teaches the limitations of claim 14 above, and further teaches a baseboard (102) coupled to the circuit board (104), but fails to specifically teach a memory device coupled to the baseboard; and an input/output device coupled to the baseboard. Brewer et al. teaches the conventionality of supplying a baseboard with a memory device (18) and an input/output device (20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Brewer with that of DiBene to provide additional functionality to the invention of DiBene. Additionally, providing memory support and I/O support to

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form a computer using the components of DiBene is notoriously old and well known in the art.

With respect to claim 17, DiBene teaches the limitations of claim 14 above, but fails to teach a fan. Brewer et al. teaches the conventionality of utilizing a fan (56) to cool components. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Brewer et al. with that of DiBene to provide an assembly for cooling the interior of a computer (Column 1, Lines 38-40).

#### **Allowable Subject Matter**

5. Claims 19, 23, 25, 27-32, and 47 are allowed.
6. The following is an examiner's statement of reasons for allowance:

With respect to claims 19, 23, 25, 27-32, the allowability resides in the overall structure of the device as recited in independent claim 19 and at least in part because said claim 19 recites, "wherein the second array of fins extends at least partially across the first array of fins, wherein the second heat sink includes a heat pipe extending at least partially across the first array of fins from below the first base to above the first array of fins".

The aforementioned limitations in combination with all remaining limitations of claim 19 are believed to render said claim 19 and all dependents therefrom (23, 25, 27-32) patentable over the art of record.

With respect to claim 47, see the "reasons for the indication of allowable subject matter" detailed in the office action filed 2/9/2006.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

**7. Claims 8, 10, 12, 18, 33, 44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.**

The following is a statement of reasons for the indication of allowable subject matter:

With respect to claim 8, the allowability resides in the overall structure of the device as recited in dependent claim 8 and at least in part because said claim 8 recites, "the second array of fins overlaps opposite sides of the first device".

The aforementioned limitations in combination with all remaining limitations of claims 1 and 8 are believed to render said claim 8 over the art of record.

With respect to claim 10, the allowability resides in the overall structure of the device as recited in dependent claim 10 and at least in part because said claim 10 recites, "the heat pipe supports the second array of fins over the first array of fins".

The aforementioned limitations in combination with all remaining limitations of claims 1 and 10 are believed to render said claim 10 over the art of record.

With respect to claim 12, the allowability resides in the overall structure of the device as recited in dependent claim 12 and at least in part because said claim 12 recites, "the heat pipe extends from below the first base to above the first array of fins".

The aforementioned limitations in combination with all remaining limitations of claims 1 and 12 are believed to render said claim 12 over the art of record.

With respect to claims 18 and 33, the allowability resides in the overall structure of the device as recited in dependent claim 18 and at least in part because said claim 18 recites, "the first array of fins is interleaved with the second array of fins".

The aforementioned limitations in combination with all remaining limitations of claims 1 and 18 are believed to render said claim 18 and all dependents therefrom (33) patentable over the art of record.

With respect to claim 44, the allowability resides in the overall structure of the device as recited in dependent claim 44 and at least in part because said claim 44 recites, "nesting the second array of fins within the first array of fins".

The aforementioned limitations in combination with all remaining limitations of claims 43 and 44 are believed to render said claim 44 patentable over the art of record.

### **Response to Arguments**

8. Applicant's arguments, see Page 12, 13, 16 filed 5/9/2006, with respect to Claims 8, 19, 44 have been fully considered and are persuasive. The rejection of claims 8, 19, 44 has been withdrawn.

**9. Applicant's arguments filed 5/9/2006 have been fully considered but they are not persuasive.**

With respect to the applicant's remarks to the objection to the drawings, the Examiner respectfully notes that the presently filed figures do not show the invention of claim 14. The Examiner respectfully requests that the applicant's provide a figure which comprehensively shows a first, second, third and fourth device with the appropriate features including the claimed bases and accompanying array of fins.

With respect to the applicant's remarks to claim 1 that, "the material between plated through holes 168 of DiBene do not provide consecutive fins that form a transverse channel therebetween having opposite open ends" the Examiner respectfully notes that it was never the Examiner's position that the elements 158, 168 form the first array of fins as claimed, rather that the first heat sink (142) forms the first array of fins (144) which meets the newly added claim language per the rejection above.

With respect to the applicant's remarks to claim 7 that, "DiBene fails to disclose a second array of fins that extend at least partially across fins 144" the Examiner respectfully notes that the claim recites, "first array of fins extends over the first base". In the present case, the first array of fins (142) of DiBene clearly extends over the first base (150) which overlaps the first device (118).

With respect to the applicant's remarks to claim 34 that, "nowhere does DiBene disclose any other heat sink which would extend at least partially across heat sink 142" the Examiner respectfully disagrees. As illustrated in Fig 3, the first heat sink is characterized as element (142) and the second heat sink is characterized as (158, 168)

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where the second heat sink (158, 168) clearly extends at least partially across the first heat sink (142).

With respect to the applicant's remarks to claim 37, the Examiner respectfully requests that the applicant's provide proof that the first means for dissipating heat will substantially receive heat from the processor as claimed.

With respect to the applicant's remarks to claims 39, 41, and 43 that, "neither fins 144 nor the material between plated through holes 168 overlap opposite sides of a device" the Examiner respectfully disagrees. As illustrated in Fig 3 of DiBene the first heat sink (142) clearly overlaps opposite sides of the second device (108, wherein the heat sink extends in the direction of the airflow arrows (174) which causes the heat sink to overlap opposite sides of the second device).

With respect to the applicant's remarks to claim 42 that, "Heat sink 142 of DiBene does not extend at least partially around and on opposite sides of the material between plated through holes 168", the Examiner respectfully disagrees. As illustrated in Fig 3 of DiBene the first heat sink (142) clearly overlaps opposite sides of the second heat sink (158, 168).

With respect to the applicant's remarks to claim 3 that, "DiBene fails to disclose another array of fins which extends at least partially across fins 144" the Examiner respectfully notes that claim 3 recites, "the first array of fins" which has been characterized by the Examiner as element 144 of DiBene. As illustrated in Fig 3 of DiBene the first array of fins (144) clearly overlaps the first device (118) as claimed.



With respect to the applicant's remarks to claim 46 that, "Neither DiBene nor the prior art of record disclose a first base horizontally spaced from and beside a second base" the Examiner respectfully disagrees. As illustrated in Fig 1, DiBene clearly teaches a first base (150) horizontally spaced from and beside a second base (106, 126, 128) as claimed.

### ***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary M. Pape whose telephone number is 571-272-


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2201. The examiner can normally be reached on Mon. - Thur. & every other Fri.  
(8:00am - 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached at 571-272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ZMP

  
**LISA LEA-EDMONDS**  
**PRIMARY EXAMINER**